

**IN THE CLAIMS**

Please amend the claims as follows:

Claim 1 (Original): A cesium vapor emitter, comprising:

a housing including at least one chamber in fluid communication with at least one outlet;

at least one reservoir containing cesium disposed within the at least one chamber, said reservoir having a filter between the cesium and the outlet;

a heating element that controls the temperature of the reservoir; and

a stopper securing the at least one reservoir within the chamber.

Claim 2 (Original): The cesium vapor emitter according to claim 1, wherein the filter comprises a porous metal.

Claim 3 (Original): The cesium vapor emitter according to claim 1, wherein the filter comprises a metal mesh.

Claim 4 (Original): The cesium vapor emitter according to claim 1, wherein the filter comprises a machined aperture.

Claim 5 (Original): The cesium vapor emitter according to claim 1, wherein the filter comprises a sintered ceramic composition.

Claim 6 (Original): The cesium vapor emitter according to claim 5, wherein the sintered ceramic composition comprises cesium mordenite.

Claim 7 (Original): The cesium vapor emitter according to claim 1, further comprising a sealing member engaging the filter, wherein the sealing member is disposed between the cesium and a plug.

Claim 8 (Original): The cesium vapor emitter according to claim 10, wherein the sealing member comprises elastomer.

Claim 9 (Original): The cesium vapor emitter according to claim 10, wherein the sealing member comprises metal.

Claim 10 (Original): The cesium vapor emitter according to claim 1, further comprising a cracking member within the reservoir.

Claim 11 (Original): The cesium vapor emitter according to claim 7, wherein the cracking member comprises metal.

Claim 12 (Original): The cesium vapor emitter according to claim 7, wherein the cracking member comprises ceramic.

Claim 13 (Original): The cesium vapor emitter according to claim 1, wherein the cesium is mixed with an inert substance to form a cesium slurry.

Claim 14 (Original): The cesium vapor emitter according to claim 13, wherein the cesium slurry comprises cesium mordenite.

Claim 15 (Original): The cesium vapor emitter according to claim 13, wherein the cesium slurry comprises glass powder.

Claim 16 (Original): The cesium vapor emitter according to claim 13, wherein the cesium slurry comprises quartz powder.

Claim 17 (Original): The cesium vapor emitter according to claim 13, wherein the cesium slurry comprises  $\text{Al}_2\text{O}_3$ .

Claim 18 (Original): The cesium vapor emitter according to claim 13, wherein the cesium slurry comprises  $\text{SiO}_2$ .

Claim 19 (Original): The cesium vapor emitter according to claim 13, wherein the cesium slurry comprises graphite.

Claim 20 (Original): The cesium vapor emitter according to claim 13, wherein the cesium slurry comprises glass wool.

Claim 21 (Original): The cesium vapor emitter according to claim 13, wherein the cesium slurry comprises metal wool.

Claim 22 (Original): The cesium vapor emitter according to claim 1, wherein the reservoir comprises bellows.

Claim 23 (Original): The cesium vapor emitter according to claim 22, wherein the cesium is disposed within an ampoule.

Claim 24 (Original): The cesium vapor emitter according to claim 1, further comprising a valve regulating the flow of cesium vapor through the outlet.

Claim 25 (Original): The cesium vapor emitter according to claim 1, wherein the outlet is designed in a nozzle shape producing a desired injection of cesium vapor.

Claim 26 (Original): The cesium vapor emitter according to claim 25, wherein the nozzle shape comprises a solid stream nozzle.

Claim 27 (Original): The cesium vapor emitter according to claim 25, wherein the nozzle shape comprises a hollow cone nozzle.

Claim 28 (Original): The cesium vapor emitter according to claim 25, wherein the nozzle shape comprises a full cone nozzle.

Claim 29 (Original): The cesium vapor emitter according to claim 25, wherein the nozzle

shape comprises a flat spray nozzle.

Claim 30 (Original): The cesium vapor emitter according to claim 1, further comprising a cooling element.

Claim 31 (Original): The cesium vapor emitter according to claim 1, further comprising a delivery tube in fluid communication with the outlet.

Claim 32 (Original): A method for emitting cesium vapor, the method comprising the steps of:

providing a housing including at least one chamber in fluid communication with at least one outlet;

inserting at least one reservoir containing cesium in the at least one chamber;

sealing the at least one reservoir in the chamber;

controlling the temperature of the reservoir; and

regulating the flow of cesium through the outlet using a filter disposed between the cesium and the outlet.

Claim 33 (Original): The method according to claim 32, further comprising the step of regulating the flow of cesium through the outlet using a valve.

Claim 34 (Original): The method according to claim 32, further comprising the step of inhibiting the formation of an oxide layer of cesium before use.

Claim 35 (Original): The method according to claim 34, wherein the step of inhibiting the formation of an oxide layer of Cesium comprises installing a cracking member in the reservoir.

Claim 36 (Original): The method according to claim 32, wherein the step of inserting at least one reservoir comprises mixing the cesium with an inert substance to form a cesium slurry.

Claim 37 (Original): The method according to claim 36, wherein the cesium slurry comprises cesium mordenite.

Claim 38 (Original): The method according to claim 36, wherein the cesium slurry comprises glass powder.

Claim 39 (Original): The method according to claim 36, wherein the cesium slurry comprises quartz powder.

Claim 40 (Original): The method according to claim 36, wherein the cesium slurry comprises  $\text{Al}_2\text{O}_3$ .

Claim 41 (Original): The method according to claim 36, wherein the cesium slurry comprises  $\text{SiO}_2$ .

Claim 42 (Original): The method according to claim 36, wherein the cesium slurry comprises graphite.

Claim 43 (Original): The method according to claim 36, wherein the cesium slurry comprises glass wool.

Claim 44 (Original): The method according to claim 36, wherein the cesium slurry comprises metal wool.

Claim 45 (Original): The method according to claim 32, wherein the step of inserting the at least one reservoir comprises cesium being disposed within an ampoule.

Claim 46 (Original): The method according to claim 45, further comprising the step of breaking the ampoule.

Claim 47 (Original): The method according to claim 46, wherein the step of providing the at least one reservoir comprises providing bellows on said at least one reservoir that permit breaking of the ampoule.

Claim 48 (Original): The method according to claim 32, wherein the step of controlling the temperature of the reservoir comprises providing a heating element.

Claim 49 (Original): The method according to claim 32, wherein the step of controlling the temperature of the reservoir comprises providing a cooling element.

Claim 50 (Original): The method according to claim 32, wherein the step of controlling the temperature of the reservoir is within a range of about 0° to 400°C.

Claim 51 (Original): The method according to claim 32, further comprising the step of forming the outlet in the shape of a nozzle for a desired injection of cesium vapor.

Claim 52 (Original): The method according to claim 51, wherein the outlet is formed in the shape of a solid stream nozzle.

Claim 53 (Original): The method according to claim 51, wherein the outlet is formed in the shape of a hollow cone nozzle.

Claim 54 (Original): The method according to claim 51, wherein the outlet is formed in the shape of a full cone nozzle.

Claim 55 (Original): The method according to claim 51, wherein the outlet is formed in the shape of a flat spray nozzle.

Claim 56 (Original): The method according to claim 32, further comprising the steps of: installing the housing outside of the vacuum chamber; providing a delivery tube in fluid



communication with the at least one outlet; and

controlling the temperature of the delivery tube such that the cesium vapor is substantially isothermal while passing from the at least one outlet through said delivery tube.

Claim 57 (Original): The method according to claim 32, further comprising the step of locating the at least one outlet at a distance from a target such that the cesium vapor emitted toward said target is substantially pure.

Claim 58 (Original): An apparatus for emitting cesium vapor, comprising:  
a cesium vapor emitter located outside a vacuum chamber;  
a housing including at least one chamber having a delivery tube in fluid communication with at least one outlet;  
at least one reservoir containing cesium disposed within the at least one chamber, said reservoir having a filter between the cesium and the outlet;  
a heating element that controls the temperature of the reservoir; and  
a stopper securing the at least one reservoir within the chamber.

Claim 59 (New): A cesium vapor emitter, comprising:  
a delivery system for delivering cesium in fluid communication with at least one outlet;  
the delivery system having a regulator between the cesium and the outlet; and  
a controller for controlling the temperature of the cesium in the delivery system.

Claim 60 (New): The cesium vapor emitter of claim 59, wherein the regulator is a filter.

Claim 61 (New): The cesium vapor emitter of claim 59, wherein the regulator is a valve.

Claim 62 (New): The cesium vapor emitter of claim 59 further comprising an outlet controller for controlling the temperature of the outlet.

Claim 63 (New): The cesium emitter of claim 59, wherein the outlet is designed in a nozzle shape producing a desired injection of cesium vapor.

Claim 64 (New): The cesium vapor emitter of claim 62, wherein the nozzle shape is a solid stream nozzle.

Claim 65 (New): The cesium vapor emitter of claim 62, wherein the nozzle shape is a hollow cone nozzle.

Claim 66 (New): The cesium vapor emitter of claim 62, wherein the nozzle shape is a full cone nozzle.

Claim 67 (New): The cesium vapor emitter of claim 62, wherein the nozzle shape is a flat spray nozzle.

Claim 68 (New): The cesium vapor emitter of claim 59, wherein the delivery system is a delivery tube.

Claim 69 (New): The cesium vapor emitter of claim 68, further comprising a second controller for controlling the temperature of the delivery tube.

Claim 70 (New): The cesium vapor emitter of claim 59, wherein the delivery system includes a reservoir.

Claim 71 (New): The cesium vapor emitter of claim 59, wherein the controller is a heating element.

Claim 72 (New): The cesium vapor emitter of claim 62, wherein the outlet controller is a heating element.

Claim 73 (New): The cesium vapor emitter of claim 59, further comprising a third controller for controlling the temperature of the delivered cesium between the delivery system and the outlet.

Claim 74 (New): A method for emitting cesium vapor, the method comprising the steps of:

continuously delivering cesium through a delivery system such that the cesium is in fluid communication with at least one outlet;

controlling the temperature of the cesium in the delivery system; and

regulating the flow of cesium through the outlet.

Claim 75 (New): The method of claim 74, wherein the flow of cesium through the outlet is regulated using a filter.

Claim 76 (New): The method of claim 74, wherein the flow of cesium through the outlet is regulated using a valve.

Claim 77 (New): The method according to claim 74, further comprising the step of controlling the temperature of the outlet.

Claim 78 (New): The method according to claim 74, where in the step of controlling the temperature of the cesium comprises providing a heating element.

Claim 79 (New): The method according to claim 74, where in the step of controlling the temperature of the cesium comprises providing a cooling element.

Claim 80 (New): The method according to claim 74 further comprising the step of forming the outlet in the shape of a nozzle through which the cesium flows.

Claim 81 (New): The method according to claim 80, wherein the outlet is formed in the shape of a solid stream nozzle.

Claim 82 (New): The method according to claim 80, wherein the outlet is formed in the shape of a hollow cone nozzle.

Claim 83 (New): The method according to claim 80, wherein the outlet is formed in the shape of a full cone nozzle.

Claim 84 (New): The method according to claim 80, wherein the outlet is formed in the shape of a flat spray nozzle.

Claim 85 (New): A method for emitting cesium vapor, the method comprising the steps of:  
continuously delivering cesium through a delivery system such that the cesium is in fluid communication with at least one outlet; and  
controlling the temperature of the cesium in the delivery system.

Claim 86 (New): A cesium vapor emitter, comprising:  
a delivery system for delivering cesium in fluid communication with at least one outlet;  
and  
a controller for controlling the temperature of the cesium in the delivery system.